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The Maryland Fruit Grower

Published Monthly by the Maryland State Horticultural Society
Edited by the Secretary, A. F. Vierheller, Extension Horticulturist

Vol. 10 **January, 1940** **No. 1**

THE FORTY-SECOND ANNUAL MEETING

The Forty-second Annual meeting of the Maryland State Horticultural Society, held at the Y. M. C. A. Auditorium, Hagerstown, Maryland, will go down in the records as one of the best of our annual winter meetings, according to the comments of the growers who attended. It was originally planned to hold the meetings at the Armory, where commercial exhibits could be combined with the meeting, but due to conflicts with other large horticultural society meetings in other sections, the commercial concerns were unable to participate in the Maryland meeting, so the change was made to the Y. M. C. A. and some provision was made for small commercial exhibits to be placed in the rear of the meeting room, and in the downstairs lobby. The weather was good, and we were pleased to note a good representation of growers from West Virginia, Virginia and Pennsylvania. It is a pleasure to have these growers with us. The educational exhibits set up by the various University of Maryland departments were attractive, and covered such topics as Japanese beetle, fruit diseases, and soil erosion control. The U. S. Bureau of Biological Survey had a very striking exhibit of mouse injury, habits, and control. The exhibit by Appalachian Apples, Inc., was interesting and colorful.

With President G. William Gardenhour presiding, the invocation was delivered by Rev. Scott R. Wagner of Zion Reformed Church. Mr. Henry Holzapfel welcomed the growers in a short address, pointing out the conditions of the world in general, and the problems which had developed from these displacements of social and economic conditions, so that the world was looking to America for guidance in solution of the many difficulties.

President Gardenhour, in his address reported a rather vigorous fight against the Wage Hour Bill, with the assistance of E. D. McCain and E. C. McFadden. He urged more marketing research, more interest in the Horticultural Society, and thanked the members for their help during his terms of office.

The topic—"How Serious are Boron and Potash Deficiencies in Our Orchards"—was discussed by Dr. L. P. Batjer of the U. S. Horticultural Field Station, Beltsville, Maryland, due to serious illness in the family of Mr. C. O. Dunbar, the original speaker. We greatly appreciate the courtesy of Dr. Batjer in dropping his work to discuss this topic on very short notice. The speaker stated that nitrogen, phosphorus and potash were long considered necessary to plant growth, and calcium, magnesium and iron also played a part, along with some of the gases from the air and soil. Our fruit soils seem to contain enough calcium, magnesium and iron, so we can forget these, except where lime is necessary for cover crop growth. Nitrogen is often lacking, but there is usually enough phosphorus in our fruit soils. Recently, there has been indication that some fruit soils lack potash in necessary quantity. In his potash deficiency studies with *apple* trees in the greenhouse, it was found that increased growth resulted from applying increased amounts

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of potash in the nutrient solution, even though no visible deficiency symptoms were evident. The best method of determining potash shortage is by analyzing the leaves. It is probable that trees running less than 1% potash in the leaves will show response to potash applications. Experiment stations have found little improvement in growth or yield where potash was applied in experimental trials, but this is probably due to the fact that the trees worked with were already well supplied with potash. It was stated that in a survey conducted in orchards of this section, it was found that 85% of the orchards were well above 1% in potash content of the leaves. *Peach* trees are more sensitive to lack of potash. The speaker showed pictures of normal peach foliage with large, broad, green leaves clear out to the terminals of the branches, in comparison with potash-starved trees bearing rolled, cigar-shaped leaves growing rather sparsely toward the branch terminals, some of the leaves even showing small shot-hole effects and scorched leaf-edges. In plots at Beltsville Farm, the manure plots and the cultivation with potash nitrate plots showed good, normal growth, but the cultivation with nitrate of soda alone showed potash shortage. The lighter soils tend to be short on potash. Potash fertilizer on the cover crop seemed to show little immediate result, but direct tree applications were very effective.

The speaker traced some research work with various plants in world-wide experiments where the effects of the lack of the so-called "trace elements" such as boron, zinc, iodine, manganese, etc., were studied. Many vegetables were increased in growth, and stem-crack, curl, little-leaf, etc., were corrected by use of very small amounts of some of the "trace elements." Internal cork of apple was corrected in New Zealand and British Columbia by use of boron. In 1936 on some 20-year-old Ben Davis trees in West Virginia, the speaker used ⅔ pound of borax per tree in the fall and on other trees ⅔ lb. boric acid in the spring and completely corrected internal cork in the fruit. This should be effective for 4 or 5 years. Too much of this material should not be applied at once, and it should not be applied unless trees show the internal cork in the fruit. This is an internal break-down of the apple usually not visible from the outside, and is not to be confused with stippen or bitter pit, which shows as pock-marks on the surface of the fruit with cork pockets beneath. Boron has not been found to have any effect on this condition.

Mr. M. D. Moore, County Agent, Hagerstown, explained the role of humus in the soil, where bacteria break down the organic matter for use of the plants, or trees. Orchard soils are not dead, but contain as high as 60 million bacteria per cubic centimeter. There is endless activity of soil bacteria and mineral matter in the soil. The organic matter from plant refuse is merely a store-room for plant food elements and is only good for the plant or tree, as it is broken down and destroyed. The bacteria use the carbon as fuel, and the nitrogen as a body builder and for end-products. As bacteria die, their bodies are broken down for plant use. Since the bacteria use nitrogen for their needs, we can see why non-legumes, either turned under or used as mulch will draw on the nitrogen supply at the expense of the trees, and why it is necessary to add nitrogen fertilizer to supply the tree's needs until the bacteria have broken down the organic material turned under, or applied as mulch, especially in the spring, when trees draw heavily upon the nitrogen supply. Organic matter will increase water-holding capacity of soils 8 to 9 times.

The speaker told of a 30-year-old sod block of York apples, near Han-

— FOLLOW THE "O R T H O" BALANCED SPRAY PROGRAM —

FOR DORMANT AND DELAYED DORMANT TREATMENT OF

APPLE PESTS

IN CUMBERLAND-SHENANDOAH VALLEYS

◆

Against ROSY APHID, RED MITE, and certain SCALE insects, make a dormant application of Nitro KLEENUP Emulsion (3 to 3½ gallons for 100 gallons of spray). As an alternative, use ORTHO Tar Oil Emulsion (3 gallons) with KLEENUP Emulsion (3½ gallons).

◆

Against SCURFY SCALE add 5 quarts of "KLEENUP" to the Nitro KLEENUP Emulsion.

◆

For delayed dormant treatment of these pests (if dormant treatment was not made), use KLEENUP Emulsion (3½ gallons for 100 gallons of spray) with ORTHO Tar Oil Emulsion (½ gallon).

◆

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cock where a fall application of 300 lbs. of 4-16-4 was made to the sod. The following spring, 8 lbs. of nitrate per tree was applied, and repeated in spring a year later. The following fall, 2 years after the first complete fertilizer application, 400 lbs. of 4-16-4 was applied, to be repeated in alternate years. A very noticeable increase of cover crop growth has resulted with new types of legumes and grasses coming in with no seeding being done. The number and size of fruits has increased noticeably in this block. No lime was applied as the soil was almost neutral in reaction. However, in another block lime was applied, rye sown in fall with 4-16-4 fertilizer, the rye to be mowed in spring and seeded to sweet clover.

In the discussion, Mr. Gardenhour reported use of cyanamid in peach orchard in fall, followed by 4-8-7 fertilizer in spring about fruit-set, giving exceptional color and size of peaches. Cyanamid in late winter seemed to affect flavor of peach, in this orchard, but fall application was very satisfactory.

Dr. F. E. Gardner of U. S. Horticultural Station, Beltsville, Md., reported unusual results from use of napthalene-acetic acid, using 3.8 grams of the material in 100 gallons of water (.001% solution), and spraying apple trees at time of harvest to prevent fruit dropping. Napthalene-acetamide was used in trials also, and gave about the same effective results.

In spraying apples, the effect of the material in preventing fruit-drop lasted about 3 weeks after spraying, therefore it should be applied as close to normal harvest time as possible. Experimental work showed sprays of napthalene-acetic acid, indole-butyric acid, indole-acetic acid, and indole-propionic acid were effective in order named, the first material being best. The materials do not prevent dropping completely, but are of great value in storms, in reducing fruit-drop. The use of ¼% oil with the material added to its effectiveness but may be objectionable in spray residue removal. Work with more than 20 varieties showed a marked reduction of dropping in all cases, but some varieties responded better than others. The speaker cautioned against application of too many of these sprays as experimental results showed repeated sprays at 3 to 6 day intervals, caused fruit to stick to spurs so tightly that stems or spurs were pulled off in picking. After the effect of the spray is lost, the drop is heavy and sudden. The material seems to have some effect on the abcission layer of the apple stem, but the nature of this effect has not yet been determined. No bad effect was noted on the fruit, nor did the material seem to affect the time of leaf-fall. The material apparently is not very poisonous and has been injected into animals in relatively large amounts with no serious results. If a man ate about 40,000 bushels of apples thus sprayed he might be affected by the spray applied to delay fruit-drop. The effects of delayed dropping on storage life of fruit is still to be investigated. The material at present costs about $2.50 per gram, but will probably be cheapened and marketed commercially with a filler and sticker, ready for tank-mixing.

In discussing results of thinning peaches before June drop, Dr. F. P. Cullinan, U. S. Horticultural Station, Beltsville, Md., stated that June drop is hard to define as there is a variation in time of dropping, but the term is applied to the first heavy drop of young developing fruits. Most peach varieties set too many fruits for proper development, especially the early, hardy-budded varieties, and early frosts and freezes are sometimes a help in thinning. Luckily, the late varieties such as Elberta usually drop more heavily than the early varieties. There are really three growth stages in the

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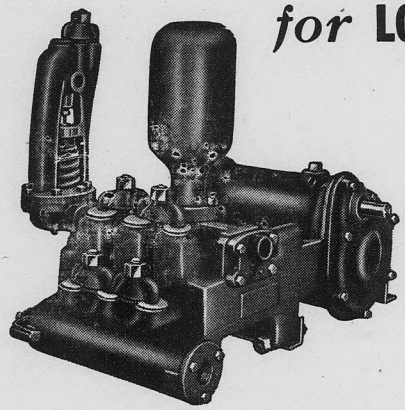

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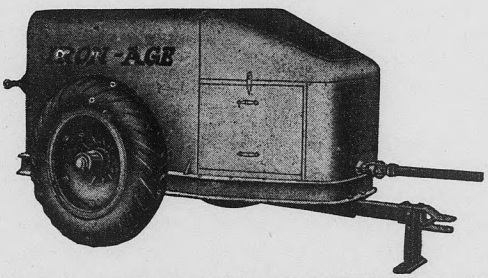

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peach fruit. First, the young fruit elongates, and increases in diameter, then the pits harden and then there is tremendous increase in cheek diameter. Shortage of moisture at this last stage may cause flat-shaped fruit, with some varieties and small fruits on overloaded trees. Leaves govern the size of the fruit, and if a peach is small at the end of the first stage of growth, it will not develop into as large a peach as would one that was of larger size at that time, unless we can influence its nutrient supply. Early thinning in the case of the smaller peach would tend to correct the condition, and cause increased size. Dr. Cullinan reported some thinning work where early thinning increased leaf area and caused more fruit bud production for the following year, also increasing percentage of larger-sized fruits. It requires about 40 good leaves to produce a 2¼ to 2½ inch peach. Rains at proper times had a good effect on peach size, and under dry conditions, thinning and fertilization gave good results. The speaker showed figures indicating that early thinning was cheaper in the long run, and did not reduce production as it did in some cases where late thinning cut the number of fruits and did not allow time enough for remaining fruits to take advantage of increased nutrient supply. He concluded that thinning should be done as early as possible, and could be simplified if the grower would learn to identify fruits that would drop anyway, and not waste time pulling these off. There is little June drop where early thinning is done, so growers need not fear drop losses to occur later. Where labor costs make early thinning expensive, heavier pruning to reduce the number of blossoms may be more economical. Pruning and thinning work together in affecting fruit size.

Dr. Earnest Walker, Plant Pathologist, University of Maryland, showed a color movie of the X disease of peach in New York state. This disease causes poor growth and no fruit production, and renders peach trees worthless. It is believed to be spread by some insect, and its host plant is the choke cherry. There are very few known choke cherry trees in Maryland, and these are in the extreme western section. The growers need not be unduly alarmed about this disease in Maryland, but the disease was shown so that growers would recognize the choke cherry and its relation to the disease.

Mr. Woodside of the Federal Surplus Commodity Corporation told of the Government purchases of Maryland apples, and how the Maryland quota was increased 50 cars per week for two weeks following the severe storm in the Hancock area. He stated that the purchase of McIntosh apples in New England should relieve the supply of this fruit and open the way for Maryland apples in Federal purchases out of storage which would probably begin in mid-January. The speaker complimented the spirit of the Maryland committee, and also reported that commission men had not complained about Federal purchases affecting their sales, as the apples went to relief families who could not buy apples. He looked for increased demand for apples in normal times, due to the distribution of apples in the schools, forming apple-eating habits among children.

Mr. H. J. Spencer, of the U. S. Biological Survey, showed an excellent 2-reel sound movie which explained mouse control in a thorough and graphic way. The only mice which damage trees are the pine or short-tailed mouse, and the field or meadow mouse. The little deer mice and moles live on insects and do no tree damage. Mice are held somewhat in check by owls, skunks, weasels, hawks and foxes. In poisoning mice, the job must be thoroughly done, baiting all infested areas. The best procedure is to place bait in the runways, and recover the runways with grass, as they were found.

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PEACH

Alton	Golden Jubilee	Mikado
Belle of Georgia	Greensboro	Red Bird
Brackett	Hale	Rochester
Carman	Hale Haven	Salway
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It is well, also to place boards, squares of roofing paper, fodder or hay in several places, where mice will be encouraged to nest, then bait these places. Dry grain bait has been found to be only fair as a bait, and if used, the runways should be examined in a day or so, to see if mice are eating the bait. They will either eat it at once, or refuse to touch it. Grain bait is most effective in orchards where there are drop apples. The wet baits seem most satisfactory for general use. The order of preference of bait is: apple, sweet potato, carrot, and oats. Strychnine as a poison is not real effective, but will give about 40% kill. The mice seem to build up an immunity to it. The Biological Survey has developed zinc phosphide which is applied to cubed apple and placed in the runways. The material is very effective, and loses its strength as the apple rots, in case it is not eaten, so is not dangerous to animals or live stock. Even if cats eat the poisoned mice, there is little danger unless the cat eats many mice. Ten cents worth of the poison treats an area of from 300 to 500 trees. Zinc phosphide may be obtained from the Biological Survey, but is not sold unless the grower has attended a demonstration and knows how to use it. Three field demonstrations have been held in Maryland and others are planned. Growers may arrange these demonstrations through their county agents or extension horticulturist. Unless growers actually attend the demonstrations and know mouse habits, baiting methods, and use of materials, the purchase and use of any kind of bait will not be effective.

President Gardenhour appointed the following committees: Auditing—Walter V. Spessard, John C. Martin, John E. Lippincott. Resolutions—B. Carlisle Barnes, J. Andrew Cohill, Russell C. Shaw. Nominating—E. D. McCain, S. B. Waddell, E. C. McFadden, and Dwight T. Walker.

The Thursday session opened with a discussion of the use of di-nitro and oil for dormant spray in rosy aphis control. Dr. W. S. Hough of Winchester (Virginia) Research Laboratory, reported varying results in control by growers, but in his tests, Nitro Kleenup; 3% oil plus 2½% tar oil; and Dowspray each gave complete or almost complete kill, down to 5 egg clusters per tree and unsprayed trees had 1,218 clusters. In another test, where check trees showed 982 egg clusters per tree, Nitrocide 3% left 122 clusters per tree, DN powder 1¼ lbs. and water 100 gallons left 11 clusters. In severe infestations, 100 gallon lots containing mixtures as oil, 2% and DN powder 1 lb., also Nitro-Kleenup 3½%; and Elgetol 1%; each gave practically complete control. The only possible reason that the speaker could find for possible bad results was that in mixing the oil into the di-nitro powder already dissolved in the spray tank in water, there might have been too much water in the tank to give a good emulsion. The speaker advised that not much water be placed in the tank before the oil is added, where these materials are tank-mixed. Another reason for failure of good control is the possible difference in the emulsifying properties of the various commercial oils, but this was only an opinion. Dr. Hough also reported some work on scurfy scale control where Elgetol, 1% gave 95% control; No. 6 Soluble Oil, 3%-100% control; Soluble Oil, 4%-92% control; Nitrocide, 3%-99% control; Soluble oil No. 6, 3% plus Dow Dormant powder, 1¼ lbs. (per 100 gallons)—100% control and unsprayed trees had 96% of the eggs to hatch. Lime-sulfur has no effect upon these scale insects. Usually a dry fall causes heavy build-up of scurfy scale. Dr. Hough spoke of some oil injury where 4% oil and 1¼ lbs. of Di-Nitro was used, causing apple buds on laterals to kill off, but terminal buds to come out. The injury seemed to be due to the

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early cold weather and blizzard in November before the trees were dormant. Two per cent oil is strong enough, and 4% oil is not necessary. In most cases, the trees recover, during the season. The question of using heavy oil dosage to delay bud opening was discussed, and it was not recommended, as it may injure the trees.

Dr. G. S. Langford, Entomologist, University of Maryland, reviewed the progress of Japanese beetle control in Maryland, stating that the program was co-operative between state, county and national governments, the idea being to kill, delay or retard the beetle, depending upon its severity in any section. He traced the emergence of the beetle from the ground in mid-June, then the egg-laying, hatching of grubs which feed in the ground, and emerge next June. The adult beetles feed until late August or early September when they die. The idea is to destroy beetles before egg-laying, and to kill the grubs in the ground. The beetle feeds on over 200 plants. The program of control consists of trapping, spraying, dusting, lawn treatments, biological control by use of parasites, nematodes, and a new method where disease germs (harmful only to the beetles) are worked into the soil. Also there is being developed a crop adjustment system where farmers are changing their crops, varieties and times of planting to dodge beetle injury. Some new traps are being developed in Maryland which will cost 28 cents compared to the dollar traps now used. Avoid cheap or very large traps. Good sprays are arsenate and flour; derris; aluminum sulfate; plain hydrated lime. It was estimated that apples might be protected in infested areas at a cost of about $4.00 per acre using 1 or 2 sprays. The beetles caught in the 10,000 traps in Maryland during the past year, if laid side by side, would reach from Washington to the Golden Gate Exposition, back to the New York World's Fair, then to Washington with a few tons of beetles left over.

Dr. E. N. Cory, State Entomologist, reviewed results of a survey made by C. Graham, Field Entomologist, where fruit from 48 orchards was examined and codling moth counts made. By assuming certain theoretical results by use of supplemental control measures such as sprays, tree-bands, storing of containers in tight rooms, screening packing houses, etc., and considering moth life-history, percentage of females, eggs laid, survivals,

GOOD'S KEYSTONE BRAND FISH OIL SPRAY SOAPS

Recommended by various State Experiment Stations, leading orchardists, nurserymen, florists, and gardeners. Use them for both dormant and summer contact sprays; controls Aphids, Thrips, San Jose Scale, Oyster Shell Scale, etc. Also efficient spreading agents, giving added insecticidal value.

No. 1—Hard Soda Fish Oil Soap: For scale and soft-bodied sucking insects on vines, shrubs, palms, and plants.

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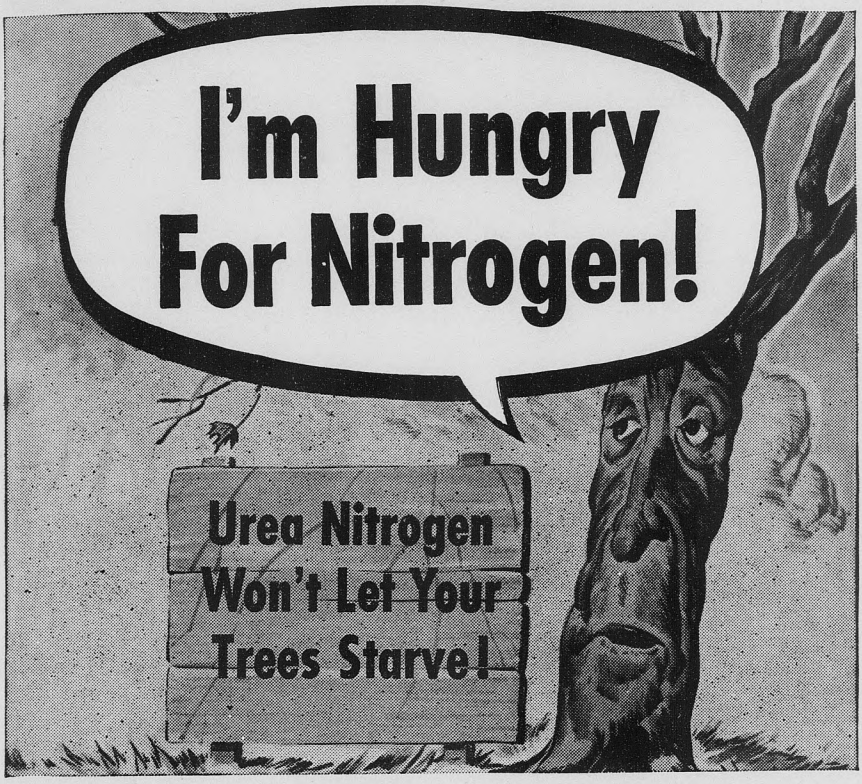

Don't let your apple trees develop these Nitrogen-Starvation Symptoms

TERMINAL GROWTH of young trees will show yellowish-green leaves and reddish petioles. *Leaves* small and reddish. Current *stem and twig growth* short and slender. Roots slender and yellowish.

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etc., the speaker showed how some growers had controlled the moth and also the possible effects expected during the coming year. In the discussion, it was emphasized that codling moths are a real factor in orchard costs, no matter where or how the under-grade fruit is sold. The cull apple must be controlled and growers should be figuring how to do it.

Mr. F. H. Wissler, a Mount Jackson, Virginia, fruit grower, stated that he had built a farm cold-storage to save transportation costs, and to have his fruit close to home. He advised growers contemplating cold storage building, to investigate every phase thoroughly, and to visit many storages. He built a one-story building to avoid elevators, and expensive steel and concrete work. The building was 80 by 168 feet, holding 57,000 to 60,000 bushels. There is an art in stacking fruit in storage. The speaker described the 8 inch interlocking tile walls, with 8 inches of granulated cork and matched wood inside walls. The floor was of crushed rock, then 4 inches of cinders, rolled, and 4 inches of cork, and more crushed rock, rolled. The floor rack was of 4 x 6 inch stringers floored by slatted 2 x 6 inch lumber, allowing air circulation under the fruit. The plant was a jetted ammonia job, using less pipe, and equipped with air ducts branched and gated, and fan-equipped. Moisture controlled by humidistat machine, keeping moisture at 91. More moisture was found necessary when storage was being loaded, possibly due to crates or baskets taking up moisture. Mold was controlled by use of outside air when possible. Air circulation was found essential. In the discussion, the use of smaller rooms in storages was suggested to cut operating costs when small amounts of fruit are in storage.

Dr. T. B. Symons, Director of Extension, University of Maryland, reviewed the various Federal farm programs, expressing belief that future adjustment programs would be even more reasonable to the various branches of agriculture. The 1941 plan may encourage growers to remove poor trees by some means. He reviewed the great increase in costs of farm machinery and labor, and stated that the money appropriated for farm relief was not nearly as much as the farm income, if prices and markets had been favorable. He favored more study of markets and distribution and looked to science for solution of many farm problems. He explained Federal Surplus Commodity Corporation purchases of farm products in Maryland, and how these products were saved from waste and used by needy people. He believed that apple advertising was one of the best things to happen in the Cumberland-Shenandoah section. The speaker described the work of Farm Security Administration in extending credit to worthy farmers in need of credit, stating that 1693 cases had been handled in Maryland, and also plans were set up to assist tenants to buy farms over a 40-year payment period. Debt adjustments in Maryland had amounted to over 1 million dollars, involving 616 clients. Agricultural Adjustment payments in Maryland had been about 10 million dollars since the plan began, and over 23,000 farms were involved. Rural Electrification in Maryland had resulted in formation of two cooperative electric systems with 1,500 subscriber-members. In 1923 less than 1,000 Maryland farms had electricity while in 1939 over 19,000 farms used electricity. The speaker told of soil erosion, stating that Maryland had lost over 1 million acres in erosion. At the conclusion of this address, Mr. Arthur L. Towson, a charter member of the Society, was presented with an Honorary Life Membership certificate.

Mr. H. F. Hershey, a fruit grower from Hamburg, Pa., reported that

Half-Starved Trees Cannot Produce Good Fruit

YOU may be short on cash — but you can't let your trees be short on Nitrogen — if you want good fruit.

Money shortage has caused neglect in many orchards. Already the fruit is poor in quality. Further neglect will injure the trees.

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pollination had been a serious problem in his orchard. In a 26-year-old Stayman and Delicious block set with alternate Stayman and Delicious mixed rows, the Delicious trees at 18 years of age bore 2 to 3 bushels per tree. The mixed rows were removed, and the Delicious trees were top-worked with one graft per tree of a yellow variety, to avoid trouble in the packing house. Golden Delicious was the best graft as it grew rapidly and bloomed early and heavily. Transparent was good, but Grimes was no so satisfactory. In cases where stray trees were found, the pollination effect was noted on about 3 adjacent trees. On the grafted trees, there has been an average increase of 7 bushels per tree. He also used bouquets set in 12 quart buckets placed high in the trees. He advised use of smaller branches in bouquets as large limbs use much water and the buckets become dry. He uses 1 strong bee colony per acre, and a man cares for the bees, renewing weak colonies with package bees each year, if necessary. The bee man gets ¾ of the honey crop per year, as wages. A later block set with four rows Delicious and 4 rows of Jonathan, repeated, bore good crops at 7 years, in fact as many apples as 16 year old Delicious in the unpollinated block. In the discussion one grower reported 8 bushels increase per tree (Stayman) by use of bouquets. It was also advised that any grower having bees should have a competent man to keep them in good shape for best pollination results. Mr. George Abrams, Extension Entomologist, College Park, Md., will refer growers to bee keepers for rent or purchase of good bees.

Mr. H. W. Prettyman, Manager of Inwood, W. Va., Packing House, checked apples from the tree to the package, setting standards of determining degrees of bruise. Five varieties was considered. He found that 46% of the fruit was damaged by pickers, Golden Delicious being worst bruised, followed by Stayman and Grimes. In hauling, Jonathan was worst injured, the bruising amounting to 10 to 17%, raising the amount of bruising to 52% of the total fruit. Some bruise-free apples were run through the washer with 58% slight bruise resulting, and after passing the grader, the total bruised fruit was 79%. The average of bruise when the apples were packed ready to go, was 57%. He examined fruit from various sections, found in Morgantown, W. Va., markets, and found western apples least bruised (55%), while Eastern boxes and tubs showed 59% serious bruise, and 81% of all types of bruise. He advised against over-filled packages, finding 44½ to 45½ pounds was best, giving a tight to fairly tight pack. However, too slack a pack will loosen up in storage. He recommended check-up on pickers; keeping orchard crates in repair; smoothing orchard roads; padding the grader; more care in filling and capping containers, and using strong containers.

In the absence of Dr. A. Lee Schrader, Mr. C. H. Hitz, University of Maryland, discussed the topic of "Later Developments in Apple Juice Manufacture." Mr. Hitz stated that the clarification methods with egg white and blood albumen were not satisfactory, and sedimentation was slow and allowed fermentation to begin. More recently, such methods as gelatin-tannin; the flash-heat sedimentation, the bentonite-pectinol method and finally, the commercial filter-aid method were perfected. He found gravity filtration good for small quantity manufacture, but suggested pressure filters for large output of juice. In University of Maryland experiments, the juice was run from the press to a flash heater, where juice was heated quickly in small stainless steel coils, then run into porcelain containers where it was mixed with bentonite, and allowed to stand 20 minutes, then filtered

under pressure and pasteurized and canned at 180 degrees Fahrenheit. The sealed cans were inverted to sterilize the lids, and the canned juice cooled quickly. The juice was filtered only to a cloudy color, to preserve the taste. The speaker advised special enameled cans of small size for quick cooling after pasteurization, to avoid cooked taste, and also found that the quicker the juice gets from the press to the can, the better it will be. He advised stainless steel equipment, or at least avoidance of copper or brass equipment as far as possible, as it may give metallic taste to juice. No blends of juice have been attempted experimentally, but this is planned next year.

The Society passed resolutions to meet at Hagerstown next year, endorsed Appalachian Apples advertising plan, appointed a committee to act with nearby horticultural societies to standardize the Eastern apple box, favored action with other societies in solution of the cull apple problem, endorsed continuance of Japanese beetle control in Maryland, and passed a resolution of sympathy in the recent death of Jacob E. Metzger, Director of the Maryland Experiment Station.

Joseph G. Harrison, Berlin, Maryland, was elected President, and A. F. Vierheller, College Park, Maryland, was re-elected Secretary-Treasurer.

THE WEST VIRGINIA MEETING

The West Virginia Horticultural Society meeting will be held at the Market House, Martinsburg, February 7 and 8. This is always a good meeting. Plan to attend.

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THE THIRD APPLE SHOW

The Apple Show held at Lord Baltimore Hotel, January 10 and 11, was our best. There were 69 plates, 32 boxes, 37 baskets, 57 diamonds (16 apples) and 5 fancy baskets.

There were only 9 exhibitors, but they made up in quality of their exhibits. Mr. E. D. McCain won most points, and also had the best individual plate (Winesaps) in the Show. This plate was about perfect. There was heavy attendance at the Show, and many people seemed bewildered that such fine fruit came from Maryland, and wondered where it could be found in the markets. One lady who had lived in 32 states, said that Maryland fruit had a flavor that she had not found in any other fruit. Such a Show is a great advertisement for the Maryland fruit industry. Our thanks go to those growers who helped put the Show over in such good shape.

PRACTICAL ASSISTANCE

We are going through a house-cleaning in the fruit industry. There are thousands of trees of poor variety, poor vigor, too old for profit, or standing on poor land, that should be given a severe pruning consisting of one cut close to the ground. Growers know that these trees are a loss, but the cost of removal is high. Yet some figures show that the maintenance, spraying, etc., per year is about the same cost as removal of these trees. There is some rumor that possibly the 1941 program of Soil Conservation program will consider such trees and allow growers some financial assistance in tree removal. This is only rumor as yet.

Now, what about replacement of these trees? It is hard to recommend or predict, but it seems only sensible to replace at least a part of the acreage, moving to a new location if necessary, and using good varieties. The fruit business is going to adjust itself but it is going to be difficult in many cases.

We have heard a lot about soil erosion, and surely we have seen plenty of it. If we need to be convinced, let us simply sit on a creek bank, after the next rain, and watch the rest of the county go by. Erosion cannot be stopped completely, but can be reduced greatly. Contour planting of orchards is one method of control. Here, the cultivation is done on the level, and every cultivator mark acts as a dam to hold water. It is announced that the Maryland unit of Soil Conservation Service will give technical assistance to growers who are planning to set new orchard, vineyard or berry plantings, so that erosion will be held at a minimum. Trained men will visit the growers upon request and will lay out the proposed plantings so that the rows follow the contour. The service costs nothing, and there is no obligation on the part of the grower.

Requests for this service may be sent to the County Agricultural Agent, or Mr. John Cotton, Extension Specialist in Soil Erosion Control, College Park, Maryland, or Mr. A. F. Vierheller, Extension Horticulturist, College Park, Maryland. Such requests for assistance should be sent in as soon as possible as requests will be cared for as received.

AN ERROR

The October and November, 1939, issues of Maryland Fruit Grower were marked "Volume 10." They should be "Volume 9." We regret the error.

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Paste form containing 70 per cent elemental Sulphur—Particle size 5 microns and smaller—Excellent coverage—Quick setting—Extremely adhesive—Especially recommended for the earlier applications.

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When added to above spray combination, reduces arsenical injury—Speeds up the normal Lime Sulphur set—Acts as spreader and sticker—Replaces Hydrated Lime—Increases Sulphur residue.

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THOSE WORMS AGAIN

In News Letter No. 5, printed by Illinois State Horticultural Society, there is an article just a little different. The experience is printed here to show the many loop-holes through which codling moth may be able to crawl. The article follows:

"Clouds of dust, swirling up through fruit trees from tractors and spray rigs or trucks and autos as they travel up and down orchard lanes and gravel roads, probably mean little to thousands of fruit growers across the country who have choked a little or sneezed a lot, letting the dust nuisance go on and on. But this dust being kicked up in and around orchards from lanes and dirt roads means a whole lot more than discomfort to fruit farm workers and more wear and tear on equipment.

Around Wisconsin's famous Gays Mills section, as in many another locality where fruit production has become a highly specialized vocation, bug-controlling growers began to wonder a couple of years ago why their rightly-timed and rightly-applied codling moth sprays were losing some of their old punch; why the worms seemed to keep on finding uncovered spots on their apples even after extra care had been given to a good job of spraying.

To help these growers, University of Wisconsin's John A. Callenbach made the simple yet previously unreported observation that codling moth injury is frequently more severe near dirt and gravel roads. When he combed and printed literature on the subject, he was unable to find a single reason stated for this situation. So he set to work at the Gays Mills branch laboratory to really get the facts. In 1937, he used plots of McIntosh and Dudley apples. It was found that moth damage ran as high as 29 per cent in a McIntosh block crossed by a dusty road. As the distance from the dusty road increased, the damage decreased until plots on the fringe of the dust area showed only 11 to 14 per cent injury.

The 1937 season was ideal for codling moth activity, and it was dry so there was plenty of dust. All possible reasons for the appearance of more codling moth injury in the dusty sections were considered, and Callenbach and his co-workers concluded that the only cause was the presence of heavy dust deposits on the fruit.

Making certain of their conclusions, these workers tried the tests again last year. But conditions were just the opposite of those which prevailed in 1937. Instead of hot weather with little rain, 1938 was cool and wet. Because of conditions last year, it seems logical that if dust is the cause of the trouble the plots should show uniform injury. And that's just what happened.

In two McIntosh sections through which a dusty road ran and which were covered with dust whenever the road dried out enough, the injury varied from 43 to 34 per cent. In one plot next to the road, injury amounted to 26 per cent, while in other plots the damage was only around 13 per cent. Checks on the Dudley plots backed up the McIntosh findings. Other plots, selected especially to study details of the dust effect, supplied additional evidence.

To eliminate any question as to the harm caused by dust, Callenbach points out that the favorable season of 1937 and the mild winter of 1937-38 resulted in the presence in 1938 of more codling moths than for any other year since observations were started at Gays Mills in 1932.

From this work, the Wisconsin researchers now believe that the spray

residues tend to dry in patches, and dust sticks to these rough spots rather than on the smooth surface of the fruit. Then when codling moth larvae come along, they pass up the mechanical barrier of the dust and eat into the fruit on the smooth spots, unharmed by spray materials. The probability of kill when there is no dust is much higher since the worms feed on any part of the fruit. They also explain that the small spray droplets fail to wet the dust in the same way that a light rain fails to wet the surface of a dusty road.

For better worm control, then, growers are becoming alert to fast, economical ways to control dust. So far, the material that answers the need for speed, long life, economy and efficiency is calcium chloride. This material is applied by spreading on roads. It takes moisture from the air so that it provides a moist road surface that is smooth, firm, and dustless at all times. A recent innovation has brought to the market a flaked form of calcium chloride which is superior to the old granulated type for use in conditioning dirt and gravel roads."

For Sale—A used flotation type apple washer. No brushes on this machine. The fruit simply floats through an acid wash, then into a rinse tank. Machine is in good condition. It has been satisfactory but is being replaced with a larger unit. Write, call or visit Mr. D. M. Wertz, Waynesboro, Pennsylvania.

For Sale—2 Friend portable sprayers with 30 gallon per minute pumps, also 1 Bean portable sprayer with 35 Royal pump. All machines have 300 gallon tanks. These machines have had their annual complete overhauling, with all worn parts renewed and topped off with a coat of paint applied after old paint was scraped or burned off. Write, call, or see Mr. C. E. Bryan, Mount Pleasant Orchards, Havre de Grace, Maryland. These machines are being replaced with larger ones.

For Sale—Slightly used 6 H. P. steam boiler with copper-jacketed tinned kettle (25 gal.), stand and gauge. Cost over $300 and can be bought for $100. Write, call, or see Mr. J. F. Worst, Route 3, Box 242, Rockville, Maryland. The farm is on Columbia Pike, near Ashton.

"What did you get your baby for Christmas?"

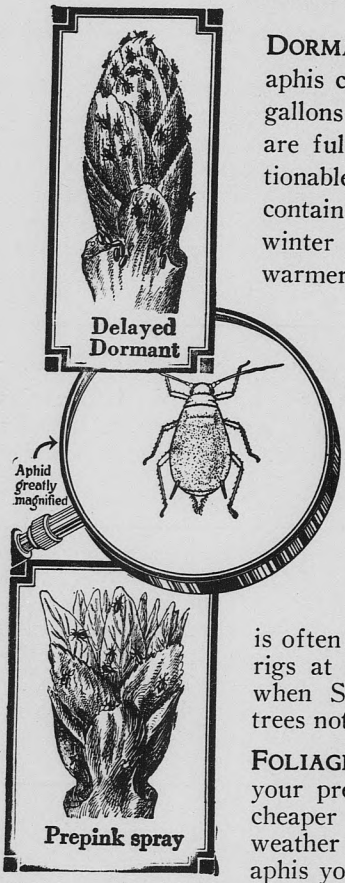
"I took $10 from the little darling's bank and bought him this lovely table lamp."

A roustabout had died, and the widow was telegraphed, "Your husband died yesterday. Please advise as to disposition." In a few hours the reply came, "His disposition was mighty ornery."

Have you read the advertisments?

APHIS CONTROL

One of These Improved Methods of Control Will Answer Your Aphis Problem



DORMANT TAR OIL SPRAY. The most certain aphis control is the use of 3 gallons Straitar or 6½ gallons Tar-o-wash to the hundred while the trees are fully dormant. These sprays are not as objectionable as the unstable tar oils. Pratt's tar oils contain no tar acids. Select any day during the late winter or early spring provided the temperature is warmer than 40°.

No orchardist who used Pratt's Straitar or Tar-o-wash last season failed to control aphis. Don't you know many who sprayed for aphis and didn't get them?

DELAYED DORMANT SPRAY. An equally effective aphis control is the use of 1 or 1½ gallons Straitar with regular Scalecide, 1 to 15, or with 3% oil emulsion, as a delayed dormant spray. Besides the advantage of using tar oils at weak dilutions, it is often easier to get into the orchard with the spray rigs at the delayed dormant season. Furthermore when Scalecide is used, there are benefits to the trees not obtained with any other spray.

FOLIAGE SPRAYS. Combine D-X—1 to 800—with your prepink, pink or calyx sprays. This spray is cheaper than nicotine, and is not as dependent on weather conditions as nicotine. It will kill every aphis you hit, and many that you do not hit because of the residual effect of the rotenone and pyrethrum in D-X. If you wait until the leaves are curled with aphis you cannot control them with any spray because you cannot reach them. D-X has many other benefits in these sprays beside aphis control, red bug, case bearers, leaf roller and codling moth. Ask for special codling moth information.

If you failed to control aphis last year write us for prices and further information on these important sprays. We have helped many others.

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